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Rail Road News.

A Fiendish Plot.

A gentleman who arrived from Springfield in the New York and New Haven train, due here at 11 o'clock last night, informs us that a few miles this side of Worcester, when the train was under speed of about thirty miles per hour, there was a sudden and violent shock which threw the passengers all into a heap, and caused the utmost confusion and consternation. The train was soon stopped, and upon examination it appeared that some hellish villains had placed a cross-tree across the track. The engineer stated that he saw it, when near, and too late to avoid it. The locomotive had bounded over it without breaking anything, and kept upon the track; as the first baggage car came in contact with it, the brake was broken, and the first passenger car on coming up got a terrible shaking. The investigating party walked down the track for some distance, and discovered that sticks of timber, plank, trees, &c., were laid in different positions across the track for some four or five miles! The fiends who had laid them on were evidently determined not to be foiled in accomplishing their hellish purpose of a complete destruction of the train, and of course of the lives of the passengers in it. But this was only one half of the murderous plot. There is a double track, and there was evidence that the up train, which had passed, had also met with similar obstructions, and broken one of their brakes, which they left by the side of the track. Sticks of timber, similar to those found upon the other track, were found lying outside and parallel with the rails, as if they had been removed from across them.

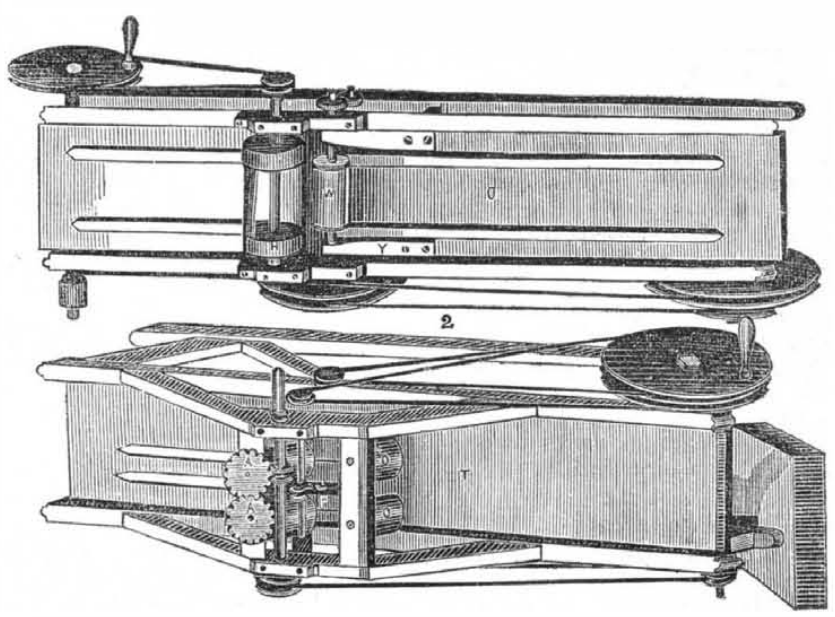
[The above is from the Boston Times. Those who talk about abolishing the death penalty, we hope will invent some new and peculiar mode of punishing such fiends as were guilty of the above crime—hanging is too good for them.

Atlanta and La Grange Railroad, Georgia.

The President of this road is the Hon. J. P. King. It has a capital of $1,000,000. Eighty-six miles of it are constructed; it has a surplus on hand. Forty-three miles of it were graded during the past ten months: L. P. Grant, a first rate man, is engineer. The road is to be all built on the cash principle, no debt being allowed to accrue. Heavy T rail, at $43 per ton, delivered, is already purchased. This road connects 1500 miles of railroad at Atlanta with the Alabama Railroad. It is calculated that passengers from New York will be able to reach New Orleans in four and a half days, when this road is finished. There will be a continuous road from New York to the Alabama River at Montgomery. The estimated cost is $850,000, and the dividends will be about 15 per cent. There can be no doubt but this road will be one of the best paying roads in the country—it will be the means of developing the great natural resources of that countey.

PLANING, TONGUEING AND GROOVING MACHINES.

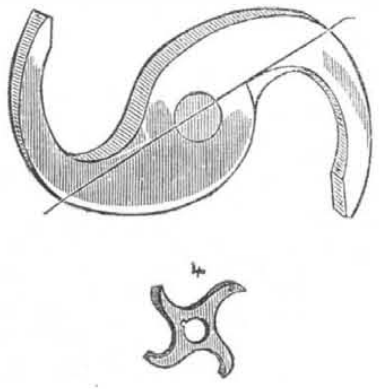
Figure 1.



We hereby present engravings of two machines, one for planing, and the other for matching timber, both machines employing pressure rollers and cutters. Figure 1 is the planing machine, and figure 2 the tongueing and grooving machine. The views are semi-perspective top views.

The planing is represented as being done by a cylinder and pressure rollers. O, figure 1, is the bed for feeding the board under the pressure roller, W; H is the cylinder with two conversely spiral set planing irons attached to the cylinder heads. All the rest of this machine will be easily understood. In fig. 2 T is the board bed on which the board is fed edgewise between two vertical pressure rollers, O O, into the tongueing and grooving tools, one of which, P, is exhibited on a horizontal revolving shaft, with two S cutters on it, and a washer between to cut the tongue on the upper edge of the board, and there is one S cutter below to cut the groove on the lower edge of the board. A A are two cog wheels on the top of the pressure rollers, which receive motion from a worm on the horizontal shaft behind the cutter shaft.

Fig. 3.



Figures 3 and 4 are views of the cutters fig. 1 is a fac simile of the original pattern, from which the revolving S cutters were made. Figure 4 is a double S cutter: it was used on this machine to tongue and groove before the single S cutter was made, but the single S cutter was found easier to grind, and was preferred. Two pair of vertical rollers were used on the matching machine, fig. 2,—one set to hold and the other to draw the board.

These engravings represent machines which were constructed by Stewart, Hill & Co., and used in the second story of their mill, half a mile from Baltimore, Md., in 1822. In that year floor boards were planed, tongued and grooved by them, and in the latter part of the year it was destroyed by fire.

The man who made the machinery is living, and Wm. W. Hubbell, Esq., of Philadelphia, has all the proof in his possession—proof which is of immense importance at the present moment. Having been shown drawings of the machinery, we deemed it our duty to present these engravings to the public, for the benefit of all parties interested in patents for planing boards. If the fact of this machinery having been in use in 1822 can be clearly established,—and we are assured by Mr. Hubbell that it can, as he has *all* the information in his possession,—then the sooner the owners of the Woodworth patent know it, so much the better for them, as well as others who are interested. We make no personal comments upon the subject, our object is to spread correct information on important subjects, and this is one of them. We stand first in doing up things in that manner and mean to keep at the head of the list.

If Adam Stewart, George Hill, or ——— Griggs (engineer) who, with others, were interested in the machinery which planed, tongued and grooved floor boards, in their mill, about half a mile from the city of Baltimore, near the Philadelphia Road, in the year 1822; (in the latter part of which year the mill was destroyed by fire,) are, or either of them is, still living, they will render important service, by informing Wm. W. Hubbell, Attorney at Law, Philadelphia, Pa., of the fact.

Fall of an Iron Bridge.

The iron bridge recently erected across Red River, at Clarksville, Tenn., fell down. A gentleman by the name of Parish, and his son, were crossing at the time, with a load of cedar timber, and the whole were precipitated to the bottom, a distance of about sixty feet. The young man had his leg broken in two places, but not otherwise injured. The father escaped, as at first supposed, without injury, but it appears since, that his situation is perhaps worse than that of his son. The team consisted of five horses and one mule; all were instantly killed except one horse, which had both hind legs broken. The abutments and pier remain firm, therefore the iron must have given way and bent until the ends slipped off the pillars.

A coal miner planted last year a root of rhubarb in a mine, 36 yards below the surface, near Stonington, in England, and this year he cut down seven stalks 20 inches in length.

Useful Receipts.

For Vegetarians.

Savoury Pie.—Cold Savoury Omelet, 3 boiled eggs; 2 table-spoonsful of tapioca; ¼ of a pint of cold water; 1 oz. of butter, and paste. Steep the tapioca in the water 10 or 15 minutes; cut the omelet in small pieces; butter a pie dish and spread a little of the tapioca over the bottom; then the omelet and eggs; then another layer of tapioca, adding seasoning and a few small pieces of butter; cover it with paste and bake it.

Potato Pie.—2 lbs. of potatoes; 2 oz. of onions, (cut small); 1 oz. of butter; paste, and ½ an oz. of tapioca. Pare and cut the potatoes; season with pepper and salt; put them in a pie dish, adding the onion, tapioca and a few pieces of butter on the top, and half a pint of water; cover it with paste and bake it in a moderately hot oven. A little celery or powdered sage may be added.

Hot Pot.—Cut the potatoes, as for a potato pie, put them in a dish, in layers, with pepper and salt between each layer, then put some butter on the top, adding a little water, and set it in the oven.

Stewed Celery.—5 oz. of celery; ½ a pint of new milk; ½ an oz. of flour, and ¼ of an oz. of butter. Cut the celery into pieces one inch in length, placing it in a pan, with as much milk as will cover it, and letting it boil gently, till tender. Drain it, seasoning with pepper and salt, thickening with the flour and butter, and then boiling the whole for a few minutes. Garnish with toast sippets.

Fried Potatoes.—Pare and cut the potatoes into thin slices, as large as a crown piece, fry them brown in olive oil or butter, lay them on a dish, and sprinkle a little salt over them; or they may be dipped in batter and fried.

Baked Potatoes.—3 lbs. of potatoes and 2 oz. of butter. Pare and roast the potatoes a short time in the oven. Then place them in a salt glazed brown dish with a little butter, and bake, occasionally shaking them, to secure their being equally browned.

Boiled Beet Root.—Boil the root till quite soft, with much salt in the water, and a piece of carbonate soda, about the size of a pea; then cool it with cold water, pare it, and slice it thin, laying it together, in a dish, with vinegar poured over it some time previous to serving.

Fried Beet Root.—Prepare the root as directed for boiled beet root: slice it lengthways, and fry in butter, seasoning with pepper and salt.

Jerusalem Artichokes.—Boil and serve with butter sauce, (melted butter,) poured over them.

Plum Pudding.—1 pint basin of bread crumbs; 15 oz. of currants and Smyrna raisins, mixed in equal quantities; 11 oz of moist sugar; 3 oz. of butter; 2 oz. of candied lemon; 8 eggs; 1 tea-cupful of apple sauce, and half a teacupful of milk. Rub the butter into the bread crumbs, and add the fruit, sugar, candied lemon and spice, beating the eggs with the whole. After standing 12 hours, mix the apple sauce or the skimmed milk with it, and boil it in a buttered mould for three hours, letting it stand for some time in the water. Serve with cream or butter-sauce.

We hope that those who complain of bad water during the warm weather, will not neglect to keep the kind they drink in porous earthen vessels, and filter it through charcoal. Every body can filter their own water with a little charcoal resting on a diaphram of canton flannel.

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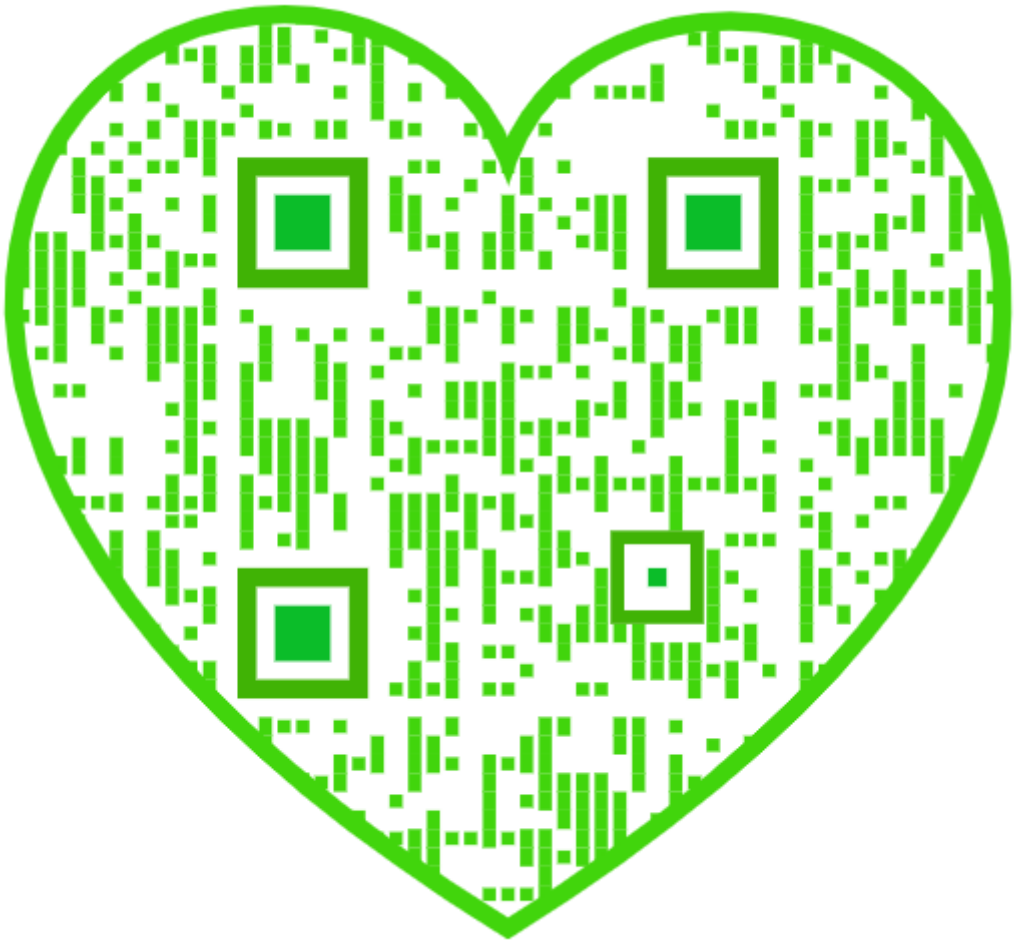

Miscellaneous.

Cancer Cured.

We are not in the habit of puffing or praising any person or thing, without full and satisfactory evidence of his or its deserts. Especially in the important department of medicine, which involves such serious considerations to the human family, do we cautiously eschew all undeserved and unfounded recommendations, never certifying to the success of any practice or medicine, unless convinced by the very best evidence. It was in strict observance of this rule that we told Dr. Gilbert, who came here from Memphis, with letters and testimonials of the highest character to his skill and success in curing that most terrible of diseases with which humanity can be afflicted—cancerous affections—that, when he brought ocular proof of his success, we would announce to the public the facts, which we saw and knew ourselves; but that we did not believe that certificates of unknown persons would be sufficient to satisfy the world, or, at least, the readers of the Delta, of his ability to cure this disease. We had occasion to regret that we ever made this banter; for, from that time, there was scarcely a day passed, that the Doctor did no bring to our office some respectable citizen who was full of joy and gratitude on his recovery from a horrible death, by the skill of Dr. Gilbert. We were soon compelled to violate our promise, to record all the wonderful cures effected by him. We gave up the task, and satisfied ourselves with a general recommendation derived from personal observation and experience. There are cases, however, to which we regard it our duty to call the attention of the pubilc, as developing some new and important facts in medicine and surgery. Dr. Gilbert professes to remove and cure the most inveterate cancers, without the agency of any cutting instrument. He extracts the foreign and poisonous substance from the flesh, by the application of plasters of his own discovery, and thus entirely eradicates the disease. We have seen innumerable complete cures effected in this manner. It is vain to endeavour to refute such evidences as have been presented to our senses on this subject. We are forced to believe them whether we will or not. A few days since we were invited to be present at the extraction of a Fungus, or bloody tumor, from the shoulder of Mr. Artemon Hill, a well known citizen of New Orleans. We were called away at the time, but a few days afterwards we met Mr. Hill, who told us that he was nearly well, and that a tumor as large as two fists had been taken out of his shoulder by Dr. Gilbert, without using a knife, or drawing a drop of blood. The former was in a rapid process of healing, and the substance extracted filled a medium-sized jar. Certainly such facts as these are of wonderful character, and we, who belong not to the faculty, will hardly be held to a very severe accountability for yielding to such strong proofs. To all persons, therefore, who are afflicted with sores, cancers or tumors of any kind, we say go to Dr. Gilbert's, (72 Magazine street,) and if he don't cure you, your case must be a very obstinate and difficult one.

[The above is from the N. O. Delta; knowing this to be a virulent disease, and one which cut off an acquaintance of ours, one of the finest of fellows, we deem it right to give publicity to anything apparently truthful respecting it.

Great Fire in Brooklyn.

A very large fire broke out in Brooklyn, on Saturday evening the 22nd. A number of explosions took place, and about $200,000 of property was destroyed. There was saltpetre, sugar, cotton, flaxseed, soda and dyewoods in the building. We have no fixed data to determine what was the cause of the explosions. Some say it was the saltpetre, others that turpentine, &c., was the cause of them. There were about fifty explosions, like the firing of heavy guns.

The population of the Island of Barbadoes, in the West Indies, is 792 inhabitants to the square mile—a thicker population than China.

Egg Hatching in China.

The hatching houses is a long shed with mud walls and thickly thatched with straw. Along the ends and down one side of the building are a number of round straw baskets, well plastered with mud, to prevent them from taking fire. In the bottom of each basket there is a tile placed; or rather the tile forms the bottom of the basket. Upon this the fire acts—a small fireplace being below each basket.—Upon the top of each basket there is a straw cover which fits closely, and is kept shut while the process is going on. In the centre of the shed are a number of large shelves placed one above another, upon which the eggs are laid at a certain stage of the process. When the eggs are bought they are put into the baskets—the fire is lighted below them—and a uniform heat kept up, ranging from 95 to 102 degress—but the Chinamen regulate the heat by their own feelings, and therefore it will, of course, vary considerable. In four or five days after the eggs have been subject to this temperature, they are taken carefully out, one by one, to a door, in which a number of holes have been bored nearly the size of the eggs; they are then held against these holes, and the Chinamen look through them, and are able to tell whether they are good or not. If good, they are taken back, and replaced in their former quarters; if bad, they are of course, excluded. In nine or ten days after this—that is about fourteen days from commencement—the eggs are taken from the basket, and spread out on the shelves. Here no fire-heat is applied but they are covered over with cotton, and a kind of blanket, under which they remain about fourteen days more—when the young ducks burst their shells, and the shed teems with life.—These shelves are large and capable of holding many thousands of eggs; and when the hatching takes place, the sight is not a little curious. The natives who rear the young duck in the surrounding country know exactly the day when it will be ready for removal; and in two days after the shell is burst, the whole of the little creatures are sold and conveyed to their new quarters.

Iron War Vessels not so Strong as Wooden Walls.

England has always boasted of her wooden walls, and recent experiments at Portsmouth, in that country, in testing the effect of shot and shell upon the sides of iron vessels, justify the claim to superiority of oaken sides implied in the boast. Capt. Chads, of the Excellent, had a large iron boat made, representing the two sides of an iron vessel, each side of the strength and consistency of one of the iron steamships. This butt was erected on the mud, at a distance of 460 yards from the Excellent, and the practice took place at high water from guns of several calibre, and various charges of powder, both shot and shell, were fired. The result show pretty conclusively that iron vessels are not fit to cope with vessels of wood, neither are they fit to go against batteries, for it is now tolerably certain that the fatal effects of every shot received on board would be quadrupled by the tendency of the ironwork to splinter, fly off, and destroy everything in the vicinity of the concussion, more especially when the ball itself is also likely to split and break to pieces likewise.

Study.

Nothing makes a man so stupid as too much study. There are some persons who pile such a load of books on their heads, that their brains seem literally squashed by them. In acquiring the ideas of others, they seem to doom themselves never to think; and while they generally know all that of which they might excusably be ignorant, they are ignorant of every thing which they ought to know. Hobbs, of Malmesbury, used to say, "If I had read as many books as other persons, I should probably know as little."

[The above, we see, has been going the rounds of the papers for some time. The author of it, we suppose, is some fellow who has neither the faculty to study himself nor appreciate it in others. There may be some persons who study *too* much, but the number is few and far between—the evil lies in the other direction.

Cingalese Veneration for the Cobra de Capello.

It is called naga by the natives, and is considered sacred; on the western coast before the arrival of Gutama Buddha, it is believed the people worshipped this snake. The reverence with which this reptile is regarded, although its venomous nature is well known, prevents many of natives destroying it;-and the most ingenious reasons are assigned by them to Europeans, to extenuate or account for the deadly bite too often inflicted by the cobra, or naga. In Kandy, when a cobra is caught, instead of slaying the noxious vermin, and thus preventing further mischief accruing, the people wishing to be rid of it will secure it, and convey it during the night to some distant village or jungle.—Those who fear and desire the destruction of the naga, but whose superstition causes them to hesitate before they take life, make a compromise with their conscience, by enclosing the snake in a mat-bag, with some boiled rice for food, and place the receptacle, inmate, and food in a flowing stream, where the snake is certain to meet death either by drowning, or from the hands of some less scrupulous devotee.

A Runaway Locomotive.

On New Year's day, 1850, a catastrophe, which it is fearful to contemplate, was averted by the aid of the telegraph. A collision had occured to an empty train at Gravesend and the driver having leaped from his engine, the latter started alone at full speed for London. Notice was immediately given by telegraph to London and other stations; and while the line was kept clear, an engine and other arrangements were prepared as a buttress to receive the runaway. The superintendent of the railway also started down the line on an engine; and on passing the runaway he reversed his engine and had it transferred at the next crossing to the up-line, so as to be in the rear of the fugitive; he then started in the chase, and on overtaking the other he ran into it at full speed, and the driver of the engine took possession of the fugitive, and all danger was at an end. Twelve stations were passed in safety; it passed Wolwich at fifteen miles an hour; it was within a couple of miles of London when it was arrested. Had its approach been unknown, the mere money value of the damage it would cause might have equalled the cost of the whole line of telegraph.

Southern Vegetable Diet.

We can have vegetables the year round, and with so little labor, that it is a matter of wonder to a provident man that an independent citizen is content with so small a variety.—The cabbage tribe will give us boiled vegetables from first of May to the first of January, even if we could not grow the cabbage heads; we then have the turnip until April or May.—We can have sweet potatoes from January to January. Then there are pumpkins, parsnips, and winter squashes for winter; squashes for summer; beans, peas, corn, &c., for summer turnip tops, spinach, asparagus, &c, for spring. What living for we of the South!—But fruits in their season are not to be forgotten. Strawberries from 15th of April to 15th of May; then Chickasaw plums until first or middle of June; figs, then raspberries; nutmeg peaches; soon after, Early York, Early Tillotson, and other peaches; June apples; Early Catharine, Jargonelle, and other pears. A family can have fruit from the tree and vine from middle of April to first of January, without resorting to hot-house culture.

Notwithstanding these varied gifts of God to us, we will continue to gourmandize meat; and for this simple reason, we are accustomed to it, and will not try another plan.—[Southern Cultivator.

California.

The Philadelphia arrived here from Chagres on last Saturday evening, bringing $2,500,000 of the real dust. There had been a number of battles with the Indians. The foreigners have resisted the tax of $20 per month. Gold was still plenty. Merchandise was reasonable in that land; provisions were also within a striking distance of a gold digger. The state of things was still favorable.

Laying it on with a Vengeance.

We had hitherto supposed that we were on the most friendly terms with our excellent neighbors, Messrs. Fowlers & Wells, but since they advise "their friends all over the world to avoid the Scientific American," we must be at issue with them. Only hear what they say in the last number of the Water Cure Journal:—

"Who ever saw this paper without regretting that he had not seen it before; or did not wish to obtain *all* the back numbers? If the opinions, feelings, or emotions of other people be like our own, we answer "nobody." Now, friends, all over the world, we are about to give you a word of caution. It is this, let your circumstances be what they may, be you rich or be you poor, avoid the Scientific American,—don't even *look* at it, for if you *do*, you will *read* it, and if you read a *single sample number*, you will get "stuck" for a volume, and that will cost you $2. So beware. The danger, should you send for a sample number, would not end here. You would be "in for it" during the remainder of your life, for no other than this one reason, viz., you could not do without it."

Cotton Growing in the East Indies.

The New Orleans cotton planted in the District of Dharwar, present a most favorable appearance; 23,000 acres have been planted; and the successful cultivation of American cotton is said to be established beyond dispute. This is certainly news: last year we had accounts from India of the complete abortion of India cotton cultivation—now a new face is put upon the matter this year. Is it to affect the market, or what? A great number of good American cotton gins have been sold this year. There is an English factory for making them in the Candish district.

Infusoria on Teeth.

Dr. H. I. Bowditch, of Boston, in a paper in Silliman's Magazine, has given the results of a microscopic examination of the accumulation on the teeth of 49 individuals, most of whom were very paticular in their care of the teeth. Animalcules and vegetable products were found in every instance except two. In those cases the brush was used three times a day, and a thread was passed between the teeth daily. Windsor soap was also used by one of these two persons with the brush. Dr. B. had tried various substances for destroying the animalcules, and especially tobacco, which seemed to be without effect. Soap suds and the chlorine tooth wash, however, were potent destroyers.

Cure for the Dropsy.

Take one half cup of black mustard seed, one large root of horse radish, two cloves of garlic, one lump of saltpetre about the size of a large nutmeg; chop these all fine, then put them in a quart bottle, and pour it full of good rye whiskey; then let this remain for three days, after which take one table spoonful three times a day.

An immediate cure for drunkenness has been discovered by a French chemist. It is acetate of ammonia dissolved in sugar and water.

[These two cures are selected; we cannot *warrant* one of them, but rather express our strong doubts about their value; as they relate to cases of experimental physics, we give them for what they are worth, premising that if a man drinks the acetate of ammonia, he will not get drunk on cider.

Hempfield Railroad.

We learn by the Banner, (Sidney, Ohio), that the Belfontaine and Indiana Railroad is not located by way of Greenville, but runs on an air line from Sidney in Ohio, to the Indiana State Line.

We are indebted to Messrs. Thompson & Hitchcock No. 149 Pearl st., for a fine lithograhic print of the burnt district of San Francisco as it appeared after the great fire of the 4th of May last. The sketch was taken on the spot by one of the firm and is no doubt very correct in every paticular.

About twenty-two tons of strawberries were brought into this city by the New York and Erie Railroad, last week.

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Plank Roads.

THEIR CONSTRUCTION.—In the most generly approved system, two parallel rows of small sticks or timber (called indifferently sleepers, stringers or sills) are imbeded in the road, 3 or 4 feet apart. Plank, eight feet long and three inches thick, are laid upon those sticks across them, at right angles to their direction. A side track of earth, to turn out upon, is carefully graded. Deep ditches are dug on each side, to ensure perfect drainage; and thus is formed a plank road.

LAYING THEM OUT.—In laying out a plank road, it is indispensable, in order to secure all the benefits which can be derived from it, to avoid or cut down all steep ascents.

A very short rise of even considerable steepness may, however, be allowed to remain, to save expense; since a horse can, for a short time, put forth extra exertion to overcome such an increased resistance; and the danger of slipping is avoided by descending upon the earthern track.

A double plank track will rarely be necessary.

No one without experience in the matter can credit the amount of travel which one such track can accommodate. Over a single track near Syracuse, 161,000 teams passed in two years, averaging over 220 teams per day, and during three days 720 passed daily. The earthen tur-out track must, however, be kept in good order; and this is easy, if it slope off properly to the ditch, for it is not cut with any continuous lengthwise ruts, but is only passed over by the wheels of the wagons which turn off from the track and return to it. They thus move in curves, which would very rarely exactly hit each other, and this travel, being over the earth, tends to keep it in shape rather than to disturb it.

COVERING.—The planks having been properly laid, as has been directed, should be covered over an inch in thickness with very fine gravel or pebbles, from which all the stones or pebbles are to be raked, so as to leave nothing upon the surface of the road that could be forced into and injure the fibres of the planks.—The grit of the sand soon penetrates into the grain of the wood and combines with the fibres and the dropping upon the road to form a hard and tough covering like felt, which greatly protects the wood from the wheels and horses' shoes. Sawdust and tan-bark have also been used.

The road is now ready for use.

LAYING.—The planks should be laid directly across the road, at right angles, or 'square,' to its line. The ends of the planks are not laid evenly to a line, but project three or four inches on each side alternately, so as to prevent a rut from being formed by the side of the plank track, and make it easier for loaded wagons to get upon it, as the wheels, instead of scraping along the ends of the planks when coming towards the track obliquely after turning off, will, on coming square against the edge of one of those projecting planks, rise directly upon it. On the Canada roads every three planks project three inches on each side of the road alternately.

DURABILITY.—A plank road may require a renewal, either because it has worn out at top by the travel upon it, or because it has been destroyed at the bottom by rot. But, if the road have travel enough to make it profitable to its builders, it will wear out first, and if it does, it will have earned abundantly enough to replace it twice over, as we shall see presently. The liability to decay is therefore a secondary consideration on roads of importance.

DECAY.—As to natural decay, no hemlock road has been in use long enough to determine how long the plank can be preserved from rot. Seven years is perhaps a fair average. Different species of hemlock vary greatly; and upland timber is always more durable than from low and wet localities. The pine roads in Canada generally last about eight years, varying from seven to twelve. The original Toronto road was used chiefly by teams hauling steamboat wood, and at the end of not six years began to break through in places, and not being repaired, was principally gone at the end of ten years. Having been poorly built, badly drained, not sanded and no care bestowed upon it, indicates the minimum of durability. Oak plank cross-walks are in Detroit, the plank being laid flat as on those of pine. It is believed that oak plank, well laid, would last at least twelve or fifteen years. One set of sleepers will outlast two plankings. Several Canada roads have been relaid upon the old sleepers, thus much lessening the cost of renewal.

Electro Magnetism as a Motive Power.

At a recent meeting of the Society of arts in London, Mr. R. Hunt an author of no mean celebrity, read a very interesting paper, on this subject of which the following is an abstract: "He called attention, in the first place, to the numerous attempts which have been made to apply electro-magnetism as a power for moving machines and particularly described the apparatus employed by Jacobi, Dal Negro, M'Gauley, Wheatstone, and others, noticing incidentally the machines recently constructed by Mr. Hjorth. Since, notwithstanding the talent which has been devoted to this interesting subject, and the large amount of money which has been spent in the construction of machines, the public are not in possession of any electro-magnetic machine which is capable of exerting power economically; and finding that, notwithstanding the aid given to Jacobi by the Russian Goverment, that able experimentalist has abandoned his experimental trials,—the author has been induced to devote much attention to the examination of the first principles by which the power is regulated, with the hope of being enabled to set the entire question on a satisfactory basis.

The power of electro-magnets the author stated, could be increased without limitation. A voltaic current produced by the chemical disturbance of the elements of any battery, no matter what its form may be, is capable of producing by induction a magnetic force, this magnetic force being always in an exact ratio to the amount of matter (zinc, iron, or otherwise) consumed in the battery. Several forms of the voltaic battery were explained, particularly those of Daniell, Grove Bunsen, and Reinsch, the latter being constructed without metals, depending entirely on the action between two dissimilar fluids, slowly combining. He had, however, proved, by an extensive series of experiments, that the greatest amount of magnetic power is produced when the chemical action is the most rapid. Hence in all machines, it is more economical to employ a battery of intense action, than one in which the chemical action is slow. It has been proved by Mr. Joule, and most satisfactorily confirmed by the author, that one-horse power is obtainable in an electro-magnet engine, the most favourably constructed to prevent loss of power, at the cost of 45 lbs. of zinc, in a Grove's battery, in 24 hours, while 75 lbs. are consumed in the same time to produce the same power in a battery of Daniell's construction. The cause of this was referred to the necessity of producing a high degree of excitement, to overcome the resistance which the molecular forces offer to the electrical perturbations, on which the magnetic force depends. It was contended, that although we have not perhaps arrived at the best form of voltaic battery, yet that we had learnt sufficient of the law of electro-magnetic forces to declare that, under any conditions, the amount of magnetic power would depend on the change of state—consumption of an element—in the baterry, and that the question resolved itself into this :—

What amount of magnetic power can be obtained from an equivalent of any material consumed? The following were regarded as the most satisfactory results yet obtained :—1. The force of voltaic current being equal to 678, the number of grains of zinc destroyed per hour was 151, which raised 9000 lbs. one foot high in that time. 2. The force of current being, relatively, 1300, the zinc destroyed in an hour was 291 grains, which raised 10,030 lbs through the space of one foot. 3. The force being 1000, the zinc consumed was 223 grains; the weight lifting one foot 12,672 lbs. The estimations made by Messrs. Scoresby and Joule, and the results obtained by Oersted, and more recently by Mr. Hunt, very nearly agree; and it was stated that one grain of coal consumed in the furnace of a Cornish engine lifted 143 lbs. one foot high, whereas one grain of zinc consumed in the battery lifted only 80 lbs.—The cost of 100 cwt. of coal is under 9d; the cost of 1 cwt. of zinc is above 216d Therefore, under the most perfect conditions, magnetic power must be nearly 25 times more expensive than steam power. But the author proceeded to show that it was almost proved to be an impossibility ever to reach even this, owing, in the first place, to the rate with which the force diminishes through space. As the mean of a great many experiments on a large variety of magnets, of different forms and modes of construction, the following results was given :

Magnet and armature in contact, lifting force - - - - 220 lbs.
" distant 1-250 of an inch 90 6
" " 1-125 " 50 7
" " 1-63 " 50 1
" " 1-50 " 40 5

Thus at one fiftieth of an inch distance four-fifths of the power is lost. This great reduction of power takes place when the magnets are stationary. The author then proceeded to show that the moment they were set in motion a great reduction of the original power immediately took place; that, indeed, any disturbance produced near the poles of a magnet diminished, during the continuance of the motion, its attractive force. The attractive force of a magnet being 150 lbs. when free of disturbance, fell to one half, by occasioning an armature to revolve near its poles. Therefore, when a system of magnets which had been constructed to produce a given power is set in revolution, every magnet at once suffers an immense loss of power, and consequently their combined action falls in practice very far short of their estimated power. This fact has not been before distinctly stated, although the author is informed that Jacobi observed it. And not merely does each magnet thus sustain an actual loss of power, but the power thus lost is converted into a new form of force, or rather becomes a current of electricity, acting in opposition to the primary current by which the magnetism is induced. From an examination of all these results, Mr. Hunt is disposed to regard electro-magnetic power as impractible, on account of its cost, which must necessarily be, he conceives, under the best conditions, fifty times more expensive than steam power, and is at present at least 150 times as expensive.

[We wonder what has become of the Report of a Committee of one, an examiner of the Patent Office, to whom was granted $30,000 last year by Congress to make experiments on Electro Magnetism as a motive power. These things are worth looking after; Uncle Sam's funds belong in trust to his children, and it is right they should know something about "how the money goes;" $30,000 is a sum not to be sneezed at. We hope a full report on the subject will issue from this labyrinth of all things curious—men and things—the Patent Office.

Wonderful Case of Injury to the Brain, and Health Restored.

The American Journal of Medical Science, for this month, contains an account of one of the most remarkable cases that ever we have read, by Prof. Bigelow, of Harvard University. It relates to a young man named Phineas P. Gage, who had a huge iron shot through his brain, and strange to say he is now *living* and in general health.

On the 13th Sept., 1848, Phineas P. Gage, a young man of twenty five, "shrewd and intelligent," a contractor or head workman on the Rutland and Burlington Railroad, had charged with gunpowder a hole drilled in the rock, and directed his assistant to fill in the sand; supposing which done, he dropped his tamping iron into the hole to drive the sand home. It happened, however, through some inadvertence, that the sand had not been poured in; and the iron striking fire upon the rock, the powder was inflamed and the accident produced by the iron being blown out like a ramrod shot from a gun. The tamping iron was a round rod three feet seven inches in length, and an inch and a quarter in diameter, tapering to a point at the top, and weighing thirteen and a quarter pounds. The whole of this immense weight and length—this bar or bludgeon of iron—was driven through Gage's face and brain, as he stooped over the hole, in the act of tamping the sand. It struck him on the left cheek just behind and below the mouth, ascended into the brain behind the left eye, passed from the skull, which it shattered and raised up, "like an inverted funnel," for a distance of about two inches in every direction around the wound, flew through the air, and was picked up by the workmen, "covered with blood and brains," several rods behind where he stood. Gage, who was also more or less scorched, was prostrated, apparently less by the blow of the iron than the force of the explosion. He fell on his back, gave a few convulsive twitches of the extremities, but "spoke in a few minutes." His men placed him in an ox cart, in which he rode three quarters of a mile to his lodgings, sitting erect; got out of the cart himself, and with but little assistance; walked to the piazza and afterwards up stairs, talking rationally to the physicians and giving them a clearer account of the accident than his friends could; occasionally vomiting up blood, the effort of which caused hæmorrhage from the wound, with the actual loss of a considerable portion of the substance of the brain. The left eye was dull and glassy, but was sensible to the impression of light. Gage bore his sufferings with heroic fortitude, telling Dr. Williams, "here is business for you," and expressing to Dr. Harlow the hope that "he was not much hurt."

For the first ten days everything went on well, Gage being, with some intervals of natural delirium from fever, pretty rational and hopeful; that, at the close of this period, he lost the sight of the left eye, and lay for nearly a fortnight in a semi-comatose state or partial stupor; that he then began to improve in body and mind; was, within two months, walking about in the street, in defiance of instructions; suffered a relapse in consequence; and, finally, being recovered from this, was, in the tenth week, free from pain and rapidly convalescing.

"The leading feature of this case," says Prof. Bigelow, "is its improbability. A physician who holds in his hands a crowbar, three feet and a half long, and more than thirteen pounds in weight, will not readily believe that it has been driven with a crash through the brain of a man who is still able to walk off, talking with composure and equanimity of the hole in his head." Prof. B., who justly describes the case as one "perhaps unparalleled in the annals of surgery," says that he was "at first wholly sceptical," but that he was personally convinced. Mr. Gage, as we said, visited Boston in January, and was for some time under the Professor's observation, who had his head shaved and a cast taken; which, with the tamping iron, is now depsited in the Museum College. At that time, the wounds were perfectly healed, the only vestiges of the accident being blindness and an unnatural prominence of the left eye, with paralysis of the lids,—a scar on the cheek, and another on the skull showing the irregular elevation of a piece of "about the size of the palm of the hand,"—and, behind it, an irregular and deep hollow several inches in length, beneath which the pulsations of the brain were perceptible.—"Taking all the circumstances into consideration," says Prof. Bigelow, "it may be doubted whether the present is not the most remarkable history of injury to the brain, which has ever been recorded."

Pictish Castles.

A writer in the "John o'Groat Journal," says they have been pulling down the Pictish Castles on the little island on the fresh water loch called Cleikimin, near Lerwick (Zetland,) described with such minuteness by Scott in his journal, till very few traces of its original construction are left. If the enclosing of lands proceed as it has begun, these curious monuments of a race which has long since perished, will disappear.

These castles have small rooms for a strange departed race of men about four feet high.

[Those who do not know what the Pictish Castles mean, should read Lockhart's Life of Scott.

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New Inventions.

Canal Locks Superseded.

On the Monkland Canal, at Blackhill Locks, (Scotland) the waste of water, time and labor have been obviated by the substitution of a steep incline, with rails and water tight cradles. The boat is floated into one of the latter, when it is is drawn up by a wire rope worked with drums, by the power of a steam engine aided by the descending cradle filled with water. In five minutes a boat is hoisted up the incline, numbering eight large locks, at very little expense, and with the waste of no more water than that displaced by each boat when floated into its cradle. The engineer is a Mr. Leslie, of Edinburg, who has adopted the plan from American practice. Thus, as we stated two weeks ago, about British marine engines, "the scientific world now borrows and lends."

Patent Impulsoria.

The number of the "Illustrated London News," for June 22nd contains an engraving and description of a new patent machine to supersede the locomotive, and to be worked by animals on a railway. It was invented a short time since, in Italy, and has been exhibited on the South Western Railway, England. The inventor is Signor Clevent Masserano, of Piedmont. This invention is one of "Wheeler's American Horse Powers," applied to propel wagons on a railway." And such is the present state state of invention in Italy—the land of Galileo. Well, how the mighty are fallen.

Improved Foot-Operating Bath.

Mr. Thomas Holbrook, of Utica, N. Y., has invented an improvement whereby he places a double force-pump on the floor of the bath—the said pump having its chambers made on the bellows principle—each chamber made of one piece, and the two set in such a way as to be operated by the foot of the bather, he throwing his weight upon one foot after the other, thereby working the pumps and throwing up a steady stream of water, which is discharged vertically downwards by a bent tube with a *rose* on the end of it. The water to supply the bath is kept in a box or reservoir below, and any quantity desired, hot or cold, may be first placed in it.

Measures have been taken to secure a patent.

Capt. Taggart's Flying Machine.

At Lowell, on the 4th, at 4 P. M., Captain Taggart made a balloon ascension with his flying machine attached. He was up 1½ hours, travelled about 75 miles, and showed himself over Dracut, Tewksbury, Haverhill, Reading, Andover, Ipswich, Georgetown, Lawrence, Danvers, Methuen, Salem, and other towns.—He also went some distance out to sea. On his way back to Lowell, at Middleton, the gearing to his flying machine broke. Had not this accident happened he would have landed in or near Lowell, where he started from.—Capt. Taggart has exhibited a great deal of energy on trying his experiments, although we have seen no balloon to satisfy us of the safe and economical feasibility of travelling through the air; yet, may we not expect the next great invention of locomotives to be an ærial one—and such an one as will save the construction of railroads, steamboats, and all clamjamfry.

Drinking Vitriol.

A man at Newton Falls, the other day, took up a pitcher to drink out of it, when he swallowed a large quantity of oil of vitriol instead of water.. He was given lamp oil immediately and is still alive.

[The above we take from an exchange. If any person in a dyework or bleachwork, should by accident drink vitriol, a remedy can be had at once in using soda ley or potash, or what is commonly at hand "urine." The last is certainly the best remedy.

It appears after all that Table Rock, at Niagara Falls, has actually fallen. Last week we did not believe it, but now, since the *table* is really turned, we must knock under.

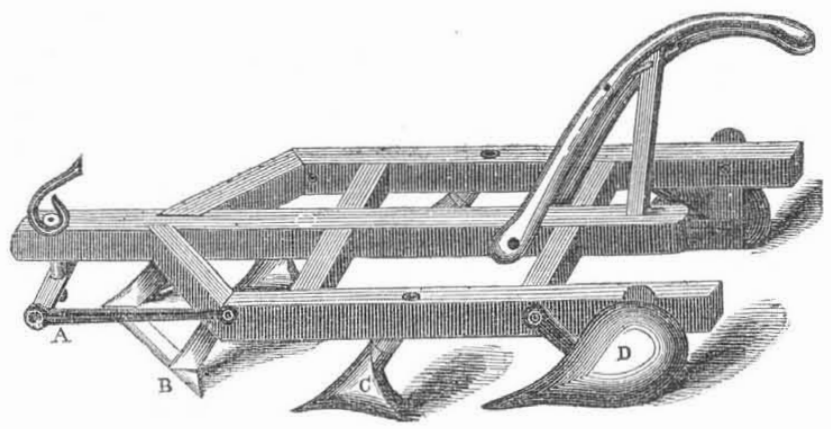
Improved Bedstead.

Mr. John W. Favor, of this city, has taken measures to secure a patent for an improved method of coupling bedsteads, and for an improvement on their bottoms. His coupling consists in having wedge projections on the posts, and metal boxes with wedge grooves secured on the ends of the rails, so that by inserting the projections in the grooves, the posts and rails become perfectly dovetailed together. The bottom of the bed is made of thin strips of metal interlaced.

Improved Harpoon.

Capt. Chas. F. Brown, of Warren, Rhode Island, has invented a new Harpoon, which, in one respect, is an important improvement,—it is to prevent the harpoon being easily pulled out after it has struek. Its head is of a peculiar shape, viz., of a flat chisel form, angling to the section of a screw to its back. It therefore cannot enter straight, but with a slight curving motion, and cannot be drawn out by a straight pull. Whalers will understand the value of this improvement. He has taken measures to secure a patent.

RODGERS' PATENT WEED CUTTER AND CULTIVATOR.



This improved implement of agriculture is the invention of Dr. Charles Rodgers, of Jefferson, Jefferson Co., Wisconsin, to whom was granted a patent, the claim of which will be found on our columns of last week, to Dr. Rodgers of Montpelier, Vt. A is a regulating bar; B is the weed-cutter; C the cultivation feet; D are side plows. When the implement moves the bar, after having been set to regulate the depth intended to be cut, it presses down the weeds in front of B, the weed-cutter, then the weeds are shaved off at the depth of about two or three inches, thus injuring the most vital part of them. The cultivators then come along, cutting about three inches deeper, so as to destroy the roots and to loosen the soil. The side plows then come along outside, and make drills, and when run across again, make square hills. These side plows can be removed when not required along with the cultivator. An examination of the above implement will show the advantages it is confidently claimed to possess over all other implements of a similar kind, for it combines the action of the weed-cutter, cultivator and plow, and by its combination is calculated to supersede entirely the use of the hoe at a time when labor generally is scarce and the weeds grow rapidly to the injury of crops; it is not only a labor-saving but a cheap tool, for with it a man, boy and horse can perform more work and more efficiently, than twenty men could. Experiment has taught every farmer that the hoe frequently merely transplants the weeds, without materially injuring them, which hardly can happen with the above implement.

The Weed-cutter and Cultivator are well adapted for all crops planted in hills or drills, and in all locations where the land can be plowed, but it will also be found to be a most valuable implement at all seasons when it is desirable to kill weeds and loosen the soil, and can have no superior in eradicating thistles and brakes. In addition we add the opinion of Mr. Ruggles of the celebrated firm of Ruggles, Nourse & Mason. of Boston, a gentleman whose experience and judgment in these matters is in all probability unsurpassed by any other person in the world. In a private letter to the inventor he says—"We are much pleased with the general arrangement and construction of your cultivator; it will undoubtedly be very much of a labor-saving and efficient implement."

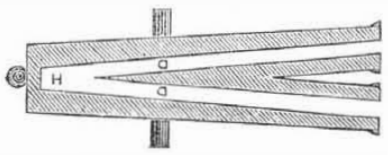
Mr. Rodgers is desirous of selling out the whole or part of his patent; any person desirous of obtaining more information about it may do so by letter, post-paid, addressed to Mr. Chas. Rodgers, at the above mentioned place, Wis.

New Manure.

By experiments which have recently been made in England with guano, common barn yard manure, and five other different kinds, proved that the nitrate of soda was the best of all. On one acre manured with the nitrate of soda, there were raised nearly 19 tons of turnips, there being used 2 cwt. 18 lbs to the acre. This was an astonishing crop.

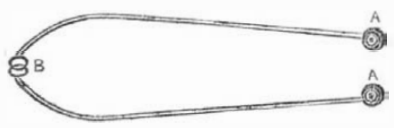
Projectile for Cutting Rigging of Vessels.

Fig. 1.



This is the invention of Mr. Hubbell N. Hale, of Cato-4-Corners, N. Y. Its object is set forth in the caption of this article. Fig. 1 is a section of the cannon, and figure 2 is a view of the shot. The cannon has two bores, D D; a cartridge is to be thrust into each, with the design to make them come in contact at the breech, H. An instrument like a knife, instead of a priming wire, is to be used, and the fuse-hole is to be fitted for the instrument to let both cartridges be primed at once, or the cannon may be made with a moveable breech. The cannon is to discharge two balls, figure 2, which are united by rods of metal and by a chain link at B. The angle of the rods is such hat when shot out of the cannon they will straighten and whirl horizontally with terrific effect for the purpose stated. This cannon has been tested, and a caveat filed in the Patent Office. The inventor would like some person or persons, who have means to assist him in completing his inventions and bringing them before the public. Any reasonable share in the invention will be given.

Fig. 2.



More information may be obtained by letter, (*p. p.*) addressed to Mr. Hale, at his residence mentioned above.

New and Improved Abdominal Supporter and Chest Expander.

Mr. John K. Henry, of Alabama, has invented a new apparatus, which combines some excellent qualities. It is so constructed that its various parts can be taken apart and one worn without the other, so as to adapt it for different persons, or for different kinds of employment, or for different attitudes, such as walking, sitting or lying. It is all combined to a peculiarly formed metalic waist-band, to which is attached side spring metal crutches with cushioned tops, to come under the arms and support them. The straps to hold back the shoulders are secured behind, and are combined either to be rigid or elastic, and in all cases to leave the chest perfectly free for the lungs to inflate to the fullest extent. The abdominal supporter is also attached to the metal waist-band, and can be worn along with or apart from the chest expander.

Measures have been taken to secure a patent.

The Feeding of Silk Worms with a New Food.

As the raising of the raw material had always been found inadequate to supply the demands of the French weavers, M. V. Repos, of Avignon, has devoted much attention to discover some other food for the silk worm, equally suitable as the mulberry, and from many experiments it appears he has at last succeeded. He first analyzed the mulberry leaves to discover their composition, and after many trials with the leaves of other plants he found the snake grass to answer his purpose. The leaf of this contains gum and sugar, and in other proportions than those of the mulberry, and a milky substance, which is not injurious to the worms; but as the plant does not contain all the elements necessary for the silkworm, he supplied this deficiency of vital matter by immersing the leaves of the snake-grass in the following liquid:—water, 1,000 grammes; powdered sugar, 30; powdered gum, 5; hydrochlorate of ammonia, 2; extract from the stems of the mulberry, 4.

The extract from the stems of the mulberry imparted to the leaves of the snake-grass all the flavor of that of the leaves of the mulberry; there is no doubt that the resin, which it contains in large quantity, powerfully assists the silk-worm in the fabrication of its precious thread; the other substances render it easy of digestion, and capable of assimilation to the requirements of the worm.

When the above-named substances are dissolved in water, the liquid is placed in a vessel, and 20 kilogrammes of snake-grass leaves are immersed in it, after which operation the leaves are placed on nets or wicker work. The leaves thus prepared over night are given to the silkworms the next day.

This method has completely succeeded, and amongs other places at the Royal Silkworm Rearing Establishment, at Neuilly, near Paris, in the months of May and June, 1847, under the superintendence of M. Aubert, the exking's steward, and a distinguished silk cultivator.

The snake-grass is sown towards the end of February; at the season of the hatching of the silk-worm, that is to say, about the middle of May in the country, the leaf has attained a height of from four to six inches; it is then in the condition most suitable to be cut; eight days after there will be leaves to cut from the same plant, and thus it will continue to furnish a supply during the time of rearing the silkworm. This system of rearing the silkworm has, besides, the advantage of being able to be practised in any latitude, and the ground will be taken from ordinary agricultural purposes but for four months, whilst the mulberry takes ten years to be productive.

As the snake-grass is a bi-annual, it may be left in the ground until the time of its maturity. It has the three-fold advantage of making two rearings with its leaves, and of collecting the roots for table use or for cattle. He did not speak of a rearing which might be made in autumn, which would be very practicable for those who could give it their attention.

American Vessels in England.

The American underwriters and navigators of American sailing vessels are endeavoring to have removed the regulation which requires that fire and light shall be put out while the vessel is lying in the Liverpool docks. In consequence of this regulation, the captain, officers and sailors are unable to live on board, being obliged to stay on shore at hotels and boarding houses at an extra expense to themselves, and to the serious detriment of the morals of the sailors and boys composing the crews. Steps are already taken to ascertain if American ships can find accommodation in the Birkenhead docks, on the other side of the Mersey from Liverpool, where no such restrictions exist.

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Paine's Electric Light.

About two months ago, almost all the papers throughout the country were giving flaming and highly colored accounts of Paine's Electric Light. Since the report of the Scientific Committee has been published, they have taken another tack, and are now just as strong in their abuse as they were before in their praises. This whole subject has been discussed long ago in our columns, between Mr. Paine and a correspondent under the cognomen of "Carburetted Hydrogen."

We will now go over the history of the wonderful *Light*, and throw some *light* on the subject. Mr. Paine sent us a circular dated Worces, Mass., Nov. 29, 1848, announcing that by "Mechanical Action" he had produced a light equal in intensity to that of 4,000 gas burners of the largest bat's wing pattern, with an apparatus occupying four square feet of room, "at a cost of one mill per hour," the only materials consumed being water and lime. "I am now engaged," he says, "in making an apparatus which will be completed this winter and its parts submitted to public inspection, except the interior of the generator." The object of the circular was stated to be an announcement to the different scientific bodies of Europe and America to allow any other person who had made a like discovery, to establish his prior claim. This circular is published on page 101, Vol. 4, Sci. Am.; it is worth looking at. We stated at the time our unbelief in the alledged discovery. On page 117, same Vol., there is an answer of Mr. Paine to our comments, stating that his light would announce itself from the Cupola of the Worcester Exchange, for some nights, in the month of January, 1849. We again took the opportunity to prove by figures that he was wrong —entirely wrong—in his calculations. After this no notice was taken of the alledged discovery by us for a long time, although we saw quite a number of flying paragraphs in other papers, and received some very curious letters about it.

Oct. 1st, 1849, Mr. Paine sent us another letter, which we published on page 28, this Vol., Sci. Am. In it he announced the perfect success of his "Hydro Electric Light," according to his issued circular, "that his light had been burning on a large scale for months, without any person to dispute the originality in point of time or fact. In that letter he also stated that one of his discoveries, viz., "the *condensing* of the electric fluid, as we do the atmosphere, until the vessel bursts, should remain undisputed." That letter is worth reading again, and we request our readers who have kept their papers to do so. He was to come a short time after that to this city and exhibit the experiment, but neither that promise, nor the one implied in his first circular, has been fastidiously adhered to. On page 61, a correspondent took up the cudgels against Mr. Paine's discovery, and treated it with a great deal of chemical knowledge. The objections against Mr. Paine's light, in that communication, was stated to be the want of illuminating power in the hydrogen, and that the hydrogen required carbonic gas to make a good white light. This was the first check move to Mr. Paine's beautiful light *made from water*. Mr. Paine answered that letter on page 85, *virtually* asserting that his light was made from water alone, and announcing that he had discovered water to be a simple substance.—Had the author of the long article in the N. Y. Dispatch, June 23, on this subject, been aware of this fact, he never would have wasted so much argument to prove a possibility by disproving it. On page 93 the same correspondent answered Mr. Paine's letter (on page 85) in a masterly manner, and demanded of Mr. Paine proof of the chemical principles alledged by him, of producing a white light from hydrogen. That letter is worth re-reading. Mr. Paine answered this by a curt reply, page 98, denying that he ever stated having produced a white light by the *simple combination* of hydrogen. This was an *ambiguous* reply, and only that.

On page 158 the same correspondent—signing himself "Carburetted Hydrogen," reviewed Mr. Porter's letter published in the Washington Union, and went over the whole history of gas illumination, exposing Mr. Porter's ignorance of chemical science.

On page 203 there is a long and able letter from Mr. Paine, on the subject, wherein he reiterates his former statement, that he had resolved water entirely into oxygen at the one pole, and entirely into oxygen at the other. This letter of Mr. Paine is worth reading—careful reading. We would most respectfully state, that in a number of experiments, we have utterly failed to resolve water entirely into a simple element like Mr. Paine. His new discovery, we believe, must always remain his own property.

Well, after all that has been said and done, it comes out at last, driven out by our correspondent, that Mr. Paine uses carburetted hydrogen. In a letter published by Mr. Paine in the New York Herald, June 20th, it is stated that the hydrogen gas passes through turpentine, and is carbonized—made into carbonated hydrogen. Here, then, he is driven to the admission, carefully concealed before, that his gas *is hydrogen carbonated*. Now, we don't believe that the passage of hydrogen through a bottle of turpentine will absorb the full equivalent of carbon from the turpentine to produce a good light. The law of gas absorption is no doubt a most remarkable one, but it possesses no such mysteries as those pretended by Mr. Paine. The certificates which he publishes are of no earthly value whatever to a scientific man, however respectable the names attached. It is wrong for any respectable man to lend his name for any purpose, to influence public opinion respecting something of which he is kept ignorant himself. It makes no matter how cheap hydrogen may be produced (but it cannot) a great amount of carbon is required to make it *good gas*, whether derived from turpentine or some other substance, and then it cannot be cheap. We therefore state again what we stated nearly two years ago, that this alledged discovery is a downright error. To make good illuminating gas it requires about three of carbon to one of hydrogen, and any man who makes good illuminating gas, must get his carbon somewhere, and it is all sheer nonsense to say that it can be got for a mere song, except it may be derived from some natural subterranean reservoir. We do not wish at present to say anything about the report of the Scientific Committee, or any of the controversial articles published out of this paper; the errors of Mr. Paine's alledged discovery were pointed out long ago in our columns, and every new developement is but proof upon proof of the correctness of the views therein expressed. If Mr. Paine is right, it is very easy for him to prove himself pure in all he has said. If not, with our feelings about such things, we would rather hide under a toad-stool for ever, than face the public.

Short Review of Gillard's Electric Light. Gesner's Light.

Last week we published the specification of M. J. P. Gillard, of France, describing his new methods of producing gas. The specification is very vague, but there are one or two points clear enough to the man of science, so as to understand their nature.

First,—He decomposes water by letting it fall on iron at a white heat, when the oxygen combines with the iron and the hydrogen is set free. This is an old and well known process.

Second,—He produces hydrogen by making steam pass through a gas retort, the same as those used in our gas works. The hydrogen passes off along with carbonic acid into an empurator. This plan is worse than useless for any good purpose. He also produces hydrogen by revolving magnets generating a current of electricity, which decomposes the water. The cost of the mechanical power to do this will be far more expensive than merely to use the gas produced direct from purified coal gas. There is one thing new and apparently good, however, in this invention,—it is the burning of hydrogen to make a clear light.—Although it will not produce a light like coal gas, yet the discovery is a very beautiful one. It consists in passing a small jet of hydrogen through a burner of an exceeding fine bore or slit on to a thin strip of platinum, made into fine threads, to answer the purpose of a fine wick. The platinum threads are heated to such whiteness as to produce along with the burning hydrogen, a brilliant light. It is well known that hydrogen produces a most intense heat in burning, but not a good light. This invention, as a philosophical one, is very interesting; but carburetted hydrogen can be produced cheaper than pure hydrogen. In an economical point of view this invention, therefore, will not come into public use. Another part of the invention is to inject steam by a perforated pipe into a locomotive, and other furnaces, to produce an intense heat. This is not exactly new, whether there is any economy in employing a small jet of steam into a furnace or not, we have no sufficient data of experiments to decide. We have heard one assert that there was economy in the plan, and another deny it. The revolving magnets to decompose water, is an invention which will cost more than it can make, and as economy is the grand object, we must wait with patience for some other light. If water, like coal, could be thrown with but very little trouble into the same state as ignited carbon, then we would have a grand source of cheap light and heat, but we have no hopes of such a discovery being made in a hurry.

The most beautiful new discovery that we are acquainted with, at present, to produce light, is the Hydro-Carbon Asphalt, patented by Dr. Gesner. It contains no sulphur, and requires no purification. We have seen the gas made from it, and soft beautiful gas it is. The asphalt, as analyzed by Drs. Jackson and Chilton, contains about 50 per cent. of volatile matter and 50 of pure carbon. It is an excellent discovery, one which—without any secret chambers—has been exhibited to a number of scientific gentlemen who could appreciate its importance. With six pounds of this hydro-carbon, 35 cubic feet of gas was obtained, which was very dense—one burner being equal to 25 candles—consuming 2 1-10 cubic feet per hour. The apparatus to make it is so cheap and simple, that any person can buy and manage it for private families. It is a most admirable invention.

Important Railroad Suit.

An action was brought by Ross Winans, of Baltimore, Md., against the Troy and Schenectady Railroad Co., in the June term of the U. S. Circuit Court, Northern District of New York, Canandaigua, for the violation of a patent granted to him Oct. 1st, 1844. The subject matter of the patent is the eight-wheel passenger and burden car in general use on railroads throughout this country. For the defense it was contended that the patent was void for 1st, the want of novelty; 2nd, for an imperfect specification; 3rd, for an imperfect claim; 4th, for the want of a legal compliance with the statute, and 5th, on the ground of abandonment. To prove the first two points several English scientific works were brought forward, and numerous railway engineers, superintendents and *experts* living in Washington, Boston, New York city, Auburn, Buffalo and Batavia, gave in their testimony. The trial occupied the attention of the Court during eight days, and was finally given to the Jury after an able charge from his honor Judge Conkling, on Friday evening. After a short absence they came in with a verdict for the plaintiff. The trial was regarded as a test case between the plaintiff (patentee) and the railroad companies, it being agreed among the several companies of this State that they would mutually aid and jointly bear the expense of the defense. For the plaintiff, Hon. J. A. Spencer, Charles M. Keeler and Samuel Blatchford, Esqs. For the defendants, Hon. S. Stevens, David Buel, Jr., and A. Worden, Esqs.

We are heartily glad to see how this case terminated. Had Mr. Winans been a poor man, the combination of wealth against him would have crushed all his efforts to obtain justice. We hold all those corporations as no better than pirates, who knowingly plunder the inventor of his just rights. Just think of the combination arrayed here against an honest practical mechanic and inventor, and reflect for a moment upon the great amount of expenses incurred for counsel in this case, and it will at once become obvious to any man that the great over-topping wall of difficulties which the poor inventor has to leap, is that of the *law* —the dollar draining law, in the cases of contested infringement. Who can devise a proper remedy for these things?

Hall for Inventors.

By the last week's "Farmer & Mechanic," we learn that a call is made for a Convention of Inventors at the Hall of Mr. Dunning, at the corner of Washington and Courtland streets, New York, to be held in August next. Mr. Dunning is to keep a Hall and exhibit models, &c.: all this is good, and we have nothing to say against it; but there is one statement in the circular which we believe to be a downright error; it is this:—"When a patentee arrives in New York, the artful and designing come to his aid in the garb of disinterested friends, and in a few days he finds himself involved, and in too many instances he conveys a portion of his title to his letters patent for a mere pittance, and there are other instances where he has been defrauded out of the whole entire right, title and interest, and left destitute of the means to convey him to a desolate home."

We unhesitatingly pronounce these statements untrue. Many inventors have been wronged, deeply wronged, but in the city of New York we do not believe there is a man with soul so dead to honesty as that represented above. If there is, let us have his name. Not to give his or their names after making such charge, implies a want of candor. We do not know who the author is of the circular making such statements, but a circular inviting inventors to send specimens of their inventions, is signed Smith Dunning, N. Y.; M. P. Coon, Lansingburg, N. Y., Abner Chapman, Fairfax, Vt.; Isaac T. Grant, Schoytelcohe, N. Y.; James Black, Philadelphia, Pa.; C. S. Scripture, Chas. Henry, J. P. Martin.

Now, gentlemen, we say if you know any person or persons who have deceived and defrauded inventors as stated in the circular to which we refer, come out like candid, true men and give the public their names and circumstances of the cases. Until you do so, we must incline to the opinion we have heretofore expressed, and so will the public. There are a great many bad men in New York, but no more to its population than any other place—if as many.

We would like to ask Mr. Chapman, with whom we are personally well acquainted, to point us to a single case where the patentee has been defrauded in this city to the extent above mentioned. We assure him that our columns are open to the expose of such villainy, and we will do it upon our own responsibility when we are convinced of its truth. We know Mr. Chapman to be an honest inventor, and he has no doubt met with injustice; but we are confident he will admit that he has met more injustice in places further south than he has in New York city.

Steam and Water Engine.

One of our cotemporaries publishes an advertising engraving of a new machine for knocking the steam engine into a cracked cracker, in the shape of forcing steam into a vessel of water in which is a water wheel. The description says "a jet of steam is thrown into the conical tube, carrying with it and introducing therein, simultaneously, a certain quantity of atmospheric air by the momentum whereof buoyancy and motive power is given to the wheel." Is not this very funny for the *quid nuncs*—those gentlemen of the P. O., who granted a patent for it. A steam wheel is illustrated on page 208, Vol. 4., Sci. Am., and if any one wants to know about its antiquity, we refer him to "Hebert."

A petition has been presented to our Common Council, by a company, to lay a double rail track through some of the streets, to supersede omnibusses. This project has called forth flaming handbills against monopoly. No names are signed to them.

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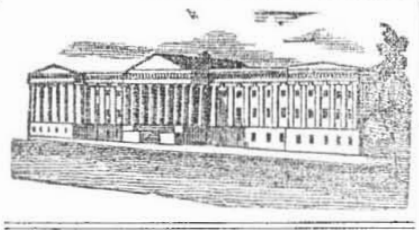

☞ Our weekly List of Patents and Designs contains every new Patent, Re-issue and Design emanating from the Department, and is prepared officially, expressly for the Scientific American, and for no other paper in the city, consequently other journals are obliged to wait the issue of the "Sci. Am." in order to profit by the expense to which we are subject, and of course must be one week behind. Those publishers who copy from this department in our columns, will, in justice to us, give proper credit for the same.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending July 2, 1850.

To B. Barstow, of New York, N. Y., for improved method of fitting the bows of vessels.

I claim making the rear edge of the cutwater to project on each side of the stem, to form a recess on each side, substantially as described, in combination with the sheathing pieces which fill up such recesses, and which cover and protect the ends of the plankings, and which also admit of giving better lines for the passage of the bow of the ship or other vessel through the water, substantially as described.

To Ernst Buckup, of New York, N. Y., for improved method of distributing the air over the heating and cooling surfaces of air-engines.

I claim causing the air entering and leaving the cylinder to pass over the heating and cooling surfaces in a thin stratum, by means of plates or their equivalents, substantially in the manner and for the purpose set forth.

To C. C. Cameron, of Harper's Ferry, Va., for improved sash stopper.

I claim the triangular shaped double acting wedges or fasteners, placed within recesses of corresponding shape, formed in the front or rear sides of the sash side bars (or in the side slats of a window frame) acted upon by any kind of handles or levers in such a manner that they will press the sashes inwards or outwards, in contradistinction to sideways, and thus retain them in any desired position, and render them air-tight within the window frame.

To R. Daniels, of Woodstock, Vt., for improvement in Straw Cutters.

I claim the method of feeding straw, fodder and other substances, to a series of rotating cutters by means of a continuous motion by a roller armed with pointed teeth and hung in a swinging frame, substantially as described.

I also claim the method of cutting straw, fodder, and the like substances, by means of the cutting cylinder, provided with cutters, the outer faces of which, from the cutting edge, are curved or inclined in towards the axis, so as to admit of continuous feed, the blades of the cutters acting as gauge plates for the length of the cut, in combination with the feeding the straw, fodder, or other substance to be cut, by a continuous motion, substantially as set forth.

To J. E Erb, of Baltimore, Md., for improvement in the feeders of a Straw Cutter.

I claim the guard piece, in combination with the feed rollers, to carry the straw or other material to the cutters, as described.

To J. Hibbs, of Pristol, Pa., for improvements in setting the teeth on the concave of a clover thresher.

I claim the right to use and manufacture machines for the purpose of threshing and hulling clover and other seeds of a similar nature, having the teeth of the concave, or the stationary set of teeth so inserted in leather on a bed of cork, as to give them an elasticity sufficient to cause them to resume their original position when misplaced by the passage of any foreign substance which may be introduced by accident or otherwise into the machine.

To H. Knowles, of Washington, D. C., and H. C. Bevington, of Holmes County, Ohio, for improvement in the cutters and rakers of a Grain and Grass Harvester.

We claim, first, making the pointed cutters concave on the faces toward each other, in the manner and for the purpose set forth, by which the cutters are rendered self-sharpening and bending the upper plate over the back of the lower or sliding cutter plate, and bringing the notched or turned edge against the lower plate in the manner and for the purposes described.

Second, the arrangement of the stationary cyma reversa fingers in combination with the vibrating hook teeth or claws, bands and the appendages for operating the same, by which the grain is collected into sheafs or gavels, before being discharged upon the ground.

Third, The combination of the hook teeth or claws, rock shaft, bent arm, lever, spring and revolving arm for arresting the grain whilst removing the gavel or sheaf from the cyma reversa fingers on to the ground, as described.

We likewise claim the combination of the pinion, perch and axle, the former working into the segment on the front axle-tree, for steering the forward part of the frame and cutters.

To B. J. Lane, of Cambridge, Mass., for improvement in Respiring Apparatus.

I claim a valve made of any metallic substance, and a nose-piece having an air-tight tube surrounding that part which is designed to fit about the nose to accommodate the features of any person, and the use of these together with a cylinder vessel, air-chamber, or bag, for the purpose of enabling a person to breathe with perfect ease, air which has been condensed more or less in any such cylinder vessel, air-chamber or bag, which is to be confined to the person of the wearer while the surrounding air is impure from any cause.

To John Locke, of Cincinnati, Ohio, for improvement in collimating levels.

I claim the mode substantially as herein described of forming a levelling instrument by combining the spirit level with the collimator having a partial lens, viz., by means of a partial reflector so placed as to reflect both the cross wire and the spirit level bubble in such manner that the image of the latter may be seen bisected by the image of the former when the instrument is horizontal, the image of the cross wire being at the same time seen in optical contact with the distant point which marks the level with the observer's eye.

To J. R. Miller, of Fredericksburg, Va., for improved re-immersing amalgamator.

I claim the combination of the revolving basin and its attached tubes or spouts with the trough containing mercury, the tubes having sufficient length to force the issuing currents to the bottom of the mercury, or nearly so, and their discharging orifices being above the surface of the mercury, which latter peculiarity causes the streams as they pass and enter in succession, to force below the surface any particles of metal which may not have been amalgamated by the first immersion.

To L. Moore, of Bart, Pa , for improvement in the seeding apparatus of seeding-apparatus.

I claim, first, the employment of a reciprocating sliding gauge plate, when said plate is provided with oblique feed openings, in combination with openings in the grating plates of different obliquity and bottom of the hopper, for increasing or diminishing the quantity of seed to be sown while the machine is in motion, by adjusting the end of the connecting rod nearer to or farther from the fulcrum of the vibrating bar, and thus increasing or diminishing the traverse or sliding movement of the gauge plate.

Second, I also claim the combination of the hooked connecting rod, arm, vibrating plate provided with a series of holes (arranged in the arc of a circle scribed from the pivoted end of the rod) and undulatory cam, with the reciprocating sliding gauge plate, by which the reciprocatory movement of the sliding gauge plate is regulated for the purpose of increasing or diminishing the feed or sowing of the seed.

To J. Nock, of Philadelphia, Pa., for improved lock bolt for shutters.

I claim the bolt having a slot through which the key passes, which will admit the bolt to be moved back sufficiently far to prevent the spring catches from catching in the notches in the bolt in combination with a key hole in the guard, which renders it necessary to remove the key before the shutters can be opened substantially in the manner and for the purpose set forth.

To J. Peirson, of Wilmington, Del., for improved arrangement of cutters in a grain and grass harvester.

Having thus fully described the nature of my improvements in mowing and reaping machines, I claim the arrangement substantially as described and represented, of cutters bolted to an endless belt, revolving in a vertical orbit and moving on a rail, guarded and disposed after the manner described.

To J. W. Pepper, of Salem, Mass., for improvement in machinery for cutting lozenges.

I claim the adjustive spring fingers connected to the two wheeled car, said car being appended to an axle of the revolving cutters—the wheels and the screws that fasten the finger plate to the transverse bar preventing the finger plate from touching the sheet of paste during the operation of cutting the lozenges therefrom, as herein fully set forth.

To S. H. Ransom, of Albany, N. Y., for improvement in the construction of cooking stoves.

I claim making the fire bottom and front hearth, or summer arrangement of the class of stoves herein specified, in one piece, connecting the two with inclined plates placed within the front plate of the stove, substantially as described, whereby I am enabled to have the hearth below the level of the fire-bottom, whilst the inclination given to the connecting parts are visible, thereby effecting the purposes herein specified.

I also claim the above method of making the hearth and fire bottom in combination with the method of connecting them with the oven bottom and stove bottom by means of tongues and grooves, whilst the fire bottom extends under the fire back, substantially in the manner and for the purpose specified.

And I also claim in combination with the above described method of making the hearth and fire bottom, the extension of the front stove plate down in front of the parts which unite the hearth and fire bottom, the said front stove plate being provided with projecting pieces to rest against the inclined joints to aid in securing in place the said united hearth and fire bottom, substantially as described.

To F. Stewart, of Philadelphia, Pa., for improvement in safety-tubes for lamps.

I claim the application or addition of inner pipe or pipes (one or more as the case may be) inserted into a piece of metal or other material as before described, being either stationary or revolving, thereby preventing the top of the lamp from being removed without drawing it over the inner pipe or pipes, and thus extinguishing the flame.

DESIGNS.

To J. Crandall, (Assignor to E. Johnson & D. B. Cox) of Troy, N. Y., for design for ststoves.

Scientific Memoranda.

A cement that will neither crack nor crease, may be made with a solution of pearlash and sulphuric acid, mixed to the exact point of neutralization with powder of gypsum.

All beams have a greater resistance when firmly fixed than when merely supported at their ends, the proportion being as 3 to 2.

Lenz has ascertained by actual experiment that electricity is as capable of producing cold as heat, to the degree of freezing water rapidly.

Frost cannot penetrate through a thick covering of snow, below a sheet of ice, or through a covering of grass on pasture, all of which act as non-conductors.

The wild pine of the West Indies, which grows on the branches of trees in hot climates, where there is little rain, has a mug which will hold a quart; when the dew falls it is received, and a valve closes at the top and prevents evaporation. Often are birds seen to insert their beaks and procure water therefrom.

One of the common methods of making saleratus is to suspend the carbonate of potassa in suitable vessels over the fermenting liquor in distilleries and breweries, but it is proposed to impregnate the salt by means of the carbonic acid from anthracite coal, as a readier method of effecting the desired end.

The forces of compression and extension are equal within the elastic limit, and consequently a triangular beam, provided it is not loaded beyond that limit, will have the same amount of deflection, whether the base or apex be uppermost, and a flanged beam the same deflection whether the flange be at the top or bottom.

Sheep may be fed on horse-chestnuts; in Switzerland the chestnuts are bruised in a machine for the purpose, and two lbs. of them given to each sheep morning and evening, a little at a time. They impart a rich flavor to the mutton.

Scientific experiments show that the increase of resistance from the atmosphere is in a higher ratio than that generally received, viz., the square of the velocity; for while the squares of the velocity increase in the ratio of 100 to 107, or 7 per cent.; the resistance is increased in the ratio of 100 to 115, or 15 per cent.

To cure a felon, take some flour and mix it with cream into a paste and put it on as a poultice: then lance it when ripe.

The phenomena attending the extinction or cessation of life by submersion in water, render it impossible to say at what distance of time after submersion the attempts at resuscitation will be fruitless. In a late case of drowning, after four hours of indefatigable exertion, animation was so far restored that the individual was able to articulate.

The paper making of the wasp shows instinct to be as great in manufactures as the honeycomb proves it to excel in architecture. The wasp makes a paper as excellent as any paper maker in *its* line; and she has for sixty centuries been acquainted with what was only discovered by men between five and six centuries ago. She makes two kinds of paper, the white and the brown; and the white takes the ink as well as if it were sized.

In a fine dry climate the sky is of much deeper blue than we ever behold it in this country, and at the tops of high mountains, above the misty exhalations of the earth, the sky appears of a still deeper color. If the air was perfectly transparent the sky would appear almost black.

The fresh leaves of the cabbage contain from 90 to 92 per cent of water.

The expense of fuel to do the same amount of work with steam engines now, is only one-third of what it was in 1815.

The aurora borealis occurs at an elevation, it is calculated, of about seventy miles above the earth's surface, at which elevation the air is rarified to a degree far above that afforded by our best constructed air-pumps.

Borax.

The boracic acid lagoons of Tuscany are an interesting instance of the conversion of a natural phenomenon, which seemed only a subject of wonder, into a productive manufacture. These lagoons are depressions or mud holes in the soil, from which issue hot vapors highly impregnated with boracic acid were formely regarded with terror by the inhabitans of their vicinity, and they sought by public prayers a deliverance from this scourge. In 1818, Mr. Landerel conceived the idea of rendering these vapors a source of profit. The lagoons being situated upon the declivity of a mountain, they were surrounded by a basin of a mason work, and water from the mountain stream conducted into them, so as to form a series of artificial lakes at different levels. The water is let into the upper basin, where it remains some twenty or thirty hours and becomes impregnated by the acid vapors; at the end of this time the water is drawn off into the second basin, when it receives a further pregnation, and so on successively through six or eight, until it reaches the evaporating reservoirs. These are of lead, and the heat for carrying on the evaporation is obtained from the vapors themselves, which are brought in pipes below the boilers. All the means of manufacture are furnished by the locality itself. The annual product of these lagoons is two and a half millions of pounds. The boracic acid is coverted into borax by combining with soda.

Polishing Marble.

MESSRS. EDITORS:—I wish to inquire of your numerous scientific correspondents for the best mode or process of polishing marble; also what would be the most suitable and durable mixture to paint or stain letters on white marble a deep and durable black, &c. E. K.

[Our correspondent wishes to know the best way of polishing, &c.,—the common method, we presume, being known to him.

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TO CORRESPONDENTS.

"J. R. G., ofN. C."—The over-shot is the best, but it is the most expensive wheel. You have not, however a two horse power of water, and we would not advise you to put up a wheel, unless it is for a farm house: then put up a re-action wheel.

"B. P. & P.,of London."—We are awaiting the result of Mr. C.'s case and shall advise you how to proceed as soon as the issue is determined, which we hope to receive by next steamer.

"S. H. J., of Iowa."—Your business can all be transacted by letter, just as well as though you were here in person. Short printed letters are best and more easily understood.—You had better have your invention published in the Sci. Am. It will do you good.

"C. O. J, of S. C."—Your remitance of $15 came safe and has been credited to each subscriber for the next Vol. We are glad to see you early in the field. By the aid of our numerous friends throughout Uncle Sam's wide domain, we hope to double our list of subscribers. Personally we could not object to it.

"L. E. P., of Mass."—It is no such thing. The power would be diminished by the immense friction, a point which you have failed to consider. Your last proposition is far more reasonable but the device is well known to engineers, and has been used extensively.

"N. J. W., of Mass."—We are of the opinion that you had better not file a caveat, providing you can construct a model without much delay. $20, received and credited.

"Z. A., of N. Y."—We are ready to take your case in hand, and request that you forward the model without delay. Our facilities for obtaining foreign patents are unsurpassed by any house in this country. We have concluded our arrangements for securing Letters Patent in every country where the right is recognized, with the utmost dispatch and at prices much less than are usually charged for such business.

"A. J. C., of Geo."—You had better advise us what sized "Burrs" you want. The prices vary in proportion. We warrant them to be of the best quality.

"G. E. R., of Conn."—You have too many irons in the fire. Would it not be much better to secure some one of your inventions before puzzling your brain about so many. Depend upon it you will never complete any of them by dodging from one to another, as you state. This is plain but good advice.

"T. P., of Canada."—Your subject will engage our attention early next week. We shall write you the result. You have a wrong idea about the American law.

"G. R., of N. Y."—We cannot supply you with the back numbers complete.

"B. W. W., of Tenn."—In answer to your favor of the 17th ult., we would state that there are several machines in use of the first mentioned by you, and and we know of two excellent ones of the second. We hope to deserve your compliments.

"A. C. P., of Geo."—Your fine list of subscribers has been received, for which we desire you to accept our thanks. We have placed the $27 to your credit.

"E. A. D., of N. Y."—It is to be regretted that so many explosions take place. We consider it a duty of ours to do all we can to prevent such catastrophes. You are in error about the Hague street explosion. It was not limited to 50 lbs., but should have been.

"W. H. of Indiana."—We only referred to the one constructed before application was made for your patent. Your private account of the affair sets the matter in a different light. We will give the subject more attention.

"J. R., of Mass."—Did you ever pay attention to the manner of a file *temperer* at his business? If not, you should; as much depends upon the degree of heat, as any thing, and the eye is alone the true judge of that.—The sulphuric acid would produce the very opposite effect desired. The thing is to have the mixture cold—use salt and sal ammoniac:—use it when the mixture is dissolving; don't let it stand long.

"P. W. & J. H. B., of Wis."—We know of no Level altogether, like yours. We believe it to be patentable.

"L. Y., of N. Y."—Your instrument for Locks must be patented by itself—this is the way we understand your letter.

"J. W., of Wis."—The invention of the horse-shoe appears to be patentable. There is an index for the last two volumes at the end of each.

"J. B., of Conn."—It is our opinion that the hydraulic press would not answer for your purpose—its operation is too slow. We may be mistaken, but we think not. If it produces the effect stated, it will be patented.

"C. B. H. & G. B."—Your papers have been sent to the Patent Office.

J. R., of Ohio; T. H. of N. Y.; O. W. W., of N. Y.; J. A. P. of Me.; C. D., of Pa.—

Your specifications were forwarded to you for signature on the 8th:—please execute and return them as soon as possible.

Money received on account of Patent Office business, since July 3rd, 1850:—

W. H. S., of Phila., $10; D. W., Jr., of Mass,, $30; F. C. A. of Ky., $30; H. H. M., of Ill., $50; L. H., of Ohio, $50; N. J. W., of Mass., $20.

Several of our correspondents will be disappointed not to hear from us this week; we shall reach you early, by letter or through our next paper; don't be discouraged nor wax wrathy. It is dangerous to get into a passion during such warm weather.

We are indebted to Mr. W. W. Gallaer, Editor and Propietor, for a copy of the San Francisco Letter Sheet of Prices Current of June 1st.

Back Volumes Scientific American.

We are obliged to inform our patrons that complete sets of all the past Volumes are entirely exhausted. We have a few incomplete sets of Vols. 2 and 3, comprising about 50 Nos. of both Vols., which may be had by remitting one dollar, and we have sets of above 40 Nos. each of Vols. 3 and 4 which will be forwarded by mail an the receipt of one dollar for each set. Those desiring to secure Vol. 5 but have delayed subscribing at first, are advised to remit $2 without delay or they may be disappointed in getting a volume at all, should they wait until the Nos. are all published?

An Improved Straw Cutter.

We have for sale a most excellent Straw Cutter, constructed upon an entirely new and improved principle. It was left at this office by the inventor, who wished us to dispose of it for him. It is easily kept in order and executes very rapidly. Price $12, carefully boxed. Address Munn & Co.

Important Notice to us!

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them onhand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

PROSSER'S PATENT LAP-WELDED Boiler Tubes—Diameter, Number and Length of each at date:—

Inches.	In Stock.		Afloat.
1 1-4	999	7-0	——
1 1-2	42	10-6	105
1 3-4	32	10-6	150
2	86	10-0	350
2	89	12-0	805
2	—	14-0	966
2	358	15-0	945
2	61	6-6	——
2	47	4-9	——
2 1-4	418	15-0	——
2 1-2	420	15-0	——
2 3-4	—	15-0	350
3	—	15-0	51
4	13	15-0	15
5	—	15-0	——
6	4	15-0	10

THOS. PROSSER & SON, Patentees,
July 9th, 1850. 28 Platt st., New York.

VON SCHMIDT'S CENTRIFUGAL PUMP.—These superior pumps, which took a Gold Medal at the Fair of the American Institute, in 1848, and a Diploma in 1849, illustrated and described in No. 19, Vol. 5, Scientific American, are offered for sale by the subscriber, of a capacity to throw from 40 to 5000 gallons per minute. A great many certificates can be shown from gentlemen who have them in constant use. State, county, and town rights for sale. Address, post-paid, DANIEL BURR, 70 Pine st., New York. 424

IRON FOUNDERS FACING DUST.—An approved article of Sea Coal Dust to mix with moulding sand; also superior Charcoal Foundry Blacking, Lehigh Blacking, Soapstone and Black Lead Dust, Fire Clay, &c.,—for sale by G. O. ROBERTSON,—City office 4 Liberty Place, (formerly Little Green street), near the PostOffice, N. Y. 37 4eow*

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TO THE THINKERS OF NEW YORK. KNOX is desirous that every rational man in want of a hat, should, for a moment, think before deciding where they shall supply that want. KNOX thinks that 128 Fulton st, is just the spot. 38 8*

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Scientific Museum.

Lightning and Lightning Conductors.

(Prepared for the Scientific American.)

No. 2.

These extracts sufficiently show that Dr. Franklin was fully aware of the importance of a system of lightning conductors. A conducting rod, whatever the metal may be of which it is made, or the manner in which it may be applied should be viewed onlyas a connector of the various conducting parts of the entire mass of buildings, ships, &c., to allow of the transmission of discharges of electricity with security, which would not pass without intermediate explosion and consequent damage, for were buildings, &c., composed entirely of metal, there would be no occasion for such an addition, nay the occurence of accident to them would then be unknown. The cathedral at Sienna, in Italy, was fitted with a conductor, consisting of large bars of iron. The popular prejudice of the time caused it to bear tbe appellation of the Heretic Rod; a terrific thunder-storm however visited the city, the cathedral towers seemed doomed to destruction, a vivid flash, a hissing noise, and a loud peal took place in almost instantaneous succession the darkness consequent upon the vividness of the flash disappeared and the tower stood, even to its gilded ornament untouched.

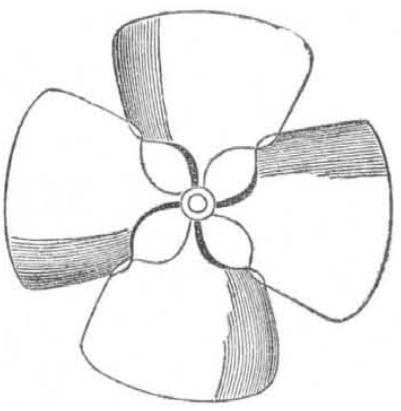
The results of experimental enquiry and practical application have shown that conductors should be composed of the best conducting metal, in a commercial point of view. They should also have the greatest electrical capacity—should be always well connected together, and of such a form as to present the greatest amount of surface for a given quality of material. Where these conditions are fulfilled their application to buildings require the first consideration—their superior terminals should be securely fixed above the highest immediately surrounding object, and be continued in the shortest and most direct line to the earth, being in their course downward fixed closely and securely to the external walls of the building, terminating at their inferior extremity below the surface of the ground, from the wall dipping downwards. Where practicable they should be continued into some well, drain, or damp place away from the building. Another and important point, about which there has until lately been much cavil, is, that not only should the conductor be fixed close to the wall but be connected also with all the principal metallic surfaces in the building. For marine purposes the same conditions equally apply, but the particular method of application here required is necessarily different to that in buildings. To fulfill the first condition, copper, as a material for the construction of conductors has been found the best in a commercial point of view; for the 2nd and 3rd conditions, copper-rods, copper-chain, copper tube, flat copper strips, and copper-wire rope, have been severally proposed, recommended, applied, and tested. To fulfil the 4th condition, copper strips, copper tubes, and copper-wire ropes have been also proposed and tried. The copper rod for buildings, has been applied according to rules; the mean diameter of those erected being ½ or inch. They have been applied to churches, towers, monumental pillars, chimney-shafts and high buildings of every kind, with success as regards their efficiency. The objections to this form, since the introduction of others, are, that where applied to high buildings, even plain and straight, such as gable end of houses, chimney-shafts, &c.; 1st, the number of joints render the perfect continuity dependant upon the care and skill of the workmen, employed; 2nd, the expense of making these joints; 3rd, the greater cost for a given surface, &c. For other forms of buildings, as spires, towers, &c., where the conductors require to be bent, set, and fitted in various positions, the waste of material in cutting, and the time required in applyiug and connecting the lengths of rod, and the expense attendant thereon, are amongst the principal objections. For marine purposes they are practically inapplicable; their form and the arrangement of the masts, &c., preclude their being fixed thereto; even if they were, they must of necessity be grooved into the masts which would weaken this important part of the ship, the superior masts having to be raised and lowered; the difficulty in effecting a perfect mechanical contact is also great. The termination of this form and the application of conductors is most objectionable; continuing down the mast it must either go through the bottom with the risk of imperfect continuity, and consequent disruptive discharge, or be conducted out of the vessel by branches at right angles, which are, of course, not only exceedingly objectionable in theory, but most dangerous in practice, as also is the introduction at all of the discharge into the vessel, which, if there be another mode, is by all means to be avoided. That this cannot be applied to the shrouds or rigging of a vessel will readily be understood.

History of Propellers and Steam Navigation.

[Continued from page 336.]

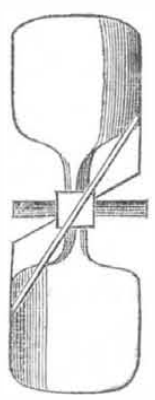
ERICSSON PROPELLER.

Fig. 68.



It is a number of years since the screw propeller was introduced into America, and in March 1834, a patent was granted to John B. Emerson for a submerged propeller. The first specification of Emerson was a bungling business, and the patent with it was not worth a snuff, as it had not a correct drawing attached, but a second drawing was filed after the patent was granted, and in a trial for infringement of his patent against Hogg & Delameter, the jury found a verdict for Emerson, and against the propeller known as "Ericson's Propeller," which is now presented as applied to the Princeton, an American frigate, which proved to be a very bad vessel in every sense of the word. The Princeton was 164 feet long, with a breadth of beam of 30 feet; the depth of the hold was 22 feet 6 inches, the draught of water was 17 feet 6 inches, and the burthen about 700 tons; the propeller was 14 feet in diameter, with six blades, and made from 32 to 36 revolutions per minute, at which rate the vessel's speed was stated to be nearly 14 miles per hour. The engines were about 400 horses power; they were of peculiar construction, having two steam cylinders, or chests, containing vibrating pistons or flaps, with

Fig. 69.



cranks upon the ends of the suspending pivots both these were coupled by connecting rods to a main crank on the driving shaft, the length of these cranks being so proportioned that their alternate vibrations should give a rotary motion to the main crank, and thus act directly upon the propeller, without the intervention of bands or gearing.

We have seen many flattering notices of connecting the pistons by direct action with the propeller shaft, and have heard many grave objections to the use of cog gearing in propellers, but the argument seems all to be in favor of the cog gearing, when the master wheel has good wooden teeth. The "City of Glasgow" is connected in this way, and if there is one fact stronger than another to give force to her arrangement of gearing, it is her success.

Henley's Magneto-Electric Telegraph.

A striking experiment has just been made under the direction of the French goverment, to test the efficacy of Mr Henley's magno-electric telegraph, which is worked without batteries of any kind, and at a fraction of the cost of the Voltaic system. The line of railway assumed for the trial was that from Paris to Valenciennes. At the Paris end the director-in-chief of telegraphs for the French government, M. Foy, superintended; while at Valenciennes were present the minister of public works Count Shekendorff, the Prussian Ambassador, M. Mosay, the chief engineer of the Belgian railways, Baron Devaux, M. Quetelet, and M. Cabray, chief engineer of the Belgian government; the three latter being members of a commission appointed by the Belgian government to report on the subject. The distance is 180 miles, being the longest telegraphic line in France. After a most satisfactory series of trals on the single distance, first with one twentieth of power, the wires were connected so as to treble the total length of wire, making 540 miles to and from Paris and back—the magnetic message being communicated through the first wire, back by the second, through the third, and back again by the earth. It was not anticipated that the magnet could possibly work through this enormous resistance; but, in fact, it is alleged it is worked as distinctly and rapidly as when only made to traverse the 180 miles with full power. The ordinary telegraph with battery power used by the French government, was then put in requisition; but not the slightest effect was produced. On the single distance, even a signal was sometimes not obtained for several minutes, owing, it is said, to some fault in the batteries, although the officials were exerting themselves to the utmost. The government officers and others inspected the working operations from 10 to 3 o'clock, and expressed themselves thoroughly satisfied with the success of the tral.

[The above is from the London News, and it shows how a thing may be described and yet not described. We are told that the above is a magno-eletric telegraph, and yet we are informed that no battery is used. What power on earth is used we are not informed. Without a battery of some kind, we venture to say the telegraph cannot be worked, unless by an electric machine, and that would not be a constant power, a thing which is required for working telegraphs. If, however, this is the "magneto telegraph," whereby a signalling current is sent along by the magnet, it is true that it will avoid the expense of batteries, but then it is too slow, and will not answer for anything but a railroad telegraph.

Pure Water--The Cholera.

The Cholera statistics of London for the year 1849, taken from the Registry in the last number of the Edinburgh Review, make it appear that a plentiful supply of pure and wholesome water is one of the most effective preventive means from the ravages of this terrible contagion. The Review states, and indeed it is well known to inquiring Americans, that London, compared with Philadelphia and New York, is miserably supplied with water. It appears that that portion of the great English metropolis which lies north of the Thames, is better supplied than that which lies south of the river. The striking fact follows:—The proportion of deaths from Cholera for the 13 weeks ending September 15th, 1849, to every 10,000 of population, was, north of the Thames, about 30, and south of it, about 159—showing that the mortality was five times greater than where there was a more sufficient and pure supply. These are averages, but more striking contrasts are exhibited in the details.

Tobacco Planting in New York.

The Syracuse Star states that Robert Fleming and Peter R. Reed have purchased a fifty acre lot three miles northwest of Syracuse, and are planting the whole of it with tobacco, employing twenty men. They have also several other fields in different parts of the same county, from all of which their crops will be heavy. For several years past they have been very successful in growing tobacco at Manlius.

After a drought of five years, the Province of Murcia, in Spain, was visited in the month of May last by copious showers of rain.

LITERARY NOTICES.

The Water Cure Journal—Published at $1 per annum, by Fowlers & Wells, Nos. 129 and 131 Nassau sts.—This work contains 32 octavo pages, besides several illustrations exhibiting the anatomy and physiology of the human body. The work is full of interest and should be introduced into every household. This July number commences the volume, and is therefore a favorable time to remit the subscription price.

The History of the Decline and Fall of the Roman Empire, by Edward Gibbon, enriched with copious Notes, (which add much to its value,) by H. H. Milman—Is now published complete in six volumes, of nearly 600 pages each: price 40 cts. per volume. This work was completed June 27th, 1787, having occupied the attention of its author for nearly 20 years. He has left a rich treasure to the world, and an enduring monument to his fame as a man of profound genius. Each successive era which marked the rise and fall of this mighty empire, are themes upon which the mind can dwell with infinite pleasure and profit, comprehending as it does one of the most awful spectacles in the history of the world—traced out in each connection by a master hand. To the statesman this is a work of incalculable worth. It is no less so to every individual who desire to become conversant with the records of the past, and the public are indebted to the enterprizing publishers, Messrs. Phillips, Sampson & Co., Boston, for an edition, at a cost so trifling, compared with its intrinsic value.

We are indebted to John Carruthers, our excellent Savannah Agent, for a copy of his "Advertiser," and also for the very complimentary notice of the Scientific American. We have known, for some time, that our friend kept constantly on hand a general assortment of the most approved "Guns, Pistols and Hardware," but never dreamed of his entering the editorial arena. Since, however, he does so "without the hope of fee or reward," nothing selfish can be attributed to him for coming out "occasionally" with the *Mammoth Advertiser*. He says in his prospectus that if he cannot give satisfaction in the editorial capacity, he feels sure of pleasing "all reasonable men with a first rate double barrel gun."

Marine and Naval Architecture.—Number 7 of this excellent and beautiful work, by John W. Griffiths, Marine and Naval Architect, is just published. It contains full descriptions for reducing from models, and enlarging from them. This work, we are happy to know, is highly prized by all those who are capable of judging of its merits.

Dictionary of Mechanics and Engine Work—Number 13 of this work, published by D. Appleton & Co., Edited by Oliver Byrne, contains varieties of Steam Engines, Engraving on Wood, Envelope Machine, Etching Machine, Fans, Falling Stocks (should be Fulling), and a Felloe Machine.

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